

Claims

- [c1] 1. A power system, comprising:
- a primary power source in electrical communication with a bridging power source, wherein said bridging power source is in electrical communication with a bus;
 - a secondary power source in electrical communication with said bus, wherein said secondary power source comprises an electrochemical system including a fuel cell;
 - a controller electrically disposed between and in operable communication with said bus and said bridging power source, and electrically disposed between and in communication with said bus and said secondary power source;
- wherein said controller monitors said primary power source, initiates powering by said bridge power source when said primary power source exhibits selected characteristics, initiates said secondary power source when said bridging power source is depleted exceeding a first selected threshold, and initiates interruption of powering by said secondary power source when at least one of said primary power source does not exhibit said selected characteristics and said secondary power source is depleted.
- [c2] 2. The power system of Claim 1, wherein said controller initiates interruption of said bridging power source is interrupted when said secondary power source is producing a desired power.
- [c3] 3. The power system of Claim 1, wherein the controller initiates recharging of said bridging power source while said secondary power source operates.
- [c4] 4. The power system of Claim 3, wherein said controller initiates powering with said bridging power source if said secondary power source is depleted beyond a second selected threshold.
- [c5] 5. The power system of Claim 4, wherein said second selected threshold is responsive to a pressure of hydrogen remaining in a hydrogen storage device.
- [c6] 6. The power system of Claim 4, wherein said selected loads include status and diagnostics.

- [c7] 7.The power system of Claim 1, further including a converter electrically disposed between and in electrical communication with said primary power source and said bridging power source.
- [c8] 8.The power system of Claim 1, wherein said first selected threshold comprises a duration of about 1 second to about 30 seconds.
- [c9] 9.The power system of Claim 1, wherein said selected characteristics include at least one of, unavailable, inoperable, inadequate to provide power at expected parameters, and unfueled.
- [c10] 10.The power system of Claim 1, wherein said controller further comprises a DC-DC power supply for converting an output voltage from at least one of said secondary power system and said bridging power source to a voltage corresponding to said bus.
- [c11] 11.The power system of Claim 1, wherein said bridging power source comprises at least one of a capacitor, a battery, and an electrolysis cell.
- [c12] 12.A method for operating a power system, comprising:
monitoring a primary power source;
if said primary power source exhibits first selected characteristics:
directing power from a bridging power source to a bus; and
if said bridging power source is depleted to a first selected threshold, initiating a secondary power source and powering said bus with said secondary power source until at least one of said primary power source does not exhibit said first selected characteristics and said secondary power source exhibits second selected characteristics and
wherein said secondary power source comprises a fuel cell.
- [c13] 13.The method of Claim 12, further comprising recharging said bridging power source with power from said bus and operating said secondary power source at least until said bridge power source is recharged.
- [c14] 14.The method of Claim 13, further comprising powering said bus with said bridging power source if said primary power source exhibits said selected

characteristics and said secondary power source exhibits said selected characteristics.

[c15] 15.The method of Claim 13, further comprising recharging said bridging power source with power from said primary power source.

[c16] 16. The method of Claim 14, further comprising providing power for selected loads if said secondary power source is depleted beyond said second selected threshold, wherein said selected loads include status and diagnostics.

[c17] 17, The method of Claim 16, wherein said second selected threshold is a pressure of hydrogen remaining in a hydrogen storage device.

[c18] 18. The method of Claim 12, further comprising at least one of applying and removing selected loads from said bus in response to status of said secondary power source.

[c19] 19.The method of Claim 12, wherein said directing further comprises converting a first voltage from said bridging power source to a second voltage and introducing said second voltage to said bus.

[c20] 20.The method of Claim 12, wherein said bridging power source comprises at least one of a capacitor, a battery, and an electrolysis cell.

[c21] 21.The method of Claim 12, wherein said first selected threshold is a duration of about 1 second to about 30 seconds.

[c22] 22.The method of Claim 12, wherein said first selected characteristics and said second selected characteristics are, individually, at least one of, unavailable, inoperable, inadequate to provide power at expected parameters, and unfueled.

[c23] 23.The method of Claim 12, further comprising monitoring at least one of a current and a voltage of said bridging power source and disconnecting said bridging power source if said at least one of said current and said voltage exceeds a third selected threshold.

[c24] 24.The method of Claim 23, wherein said third selected threshold is determined based upon a demand for power by said controller from said bridging power

source.

- [c25] 25.A method for operating a power system, comprising:
monitoring a primary power source; and
if said primary power source is insufficient to meet a demand for power:
powering a bus with a bridging power source; and
if said bridging power source is depleted to a first selected threshold, initiating
a secondary power source and powering with said secondary power source until
at least one of said primary power source is sufficient to meet said demand and
said secondary power source exhibits second selected characteristics;
wherein said secondary power source comprises a fuel cell, and wherein at said
first selected threshold is that said bridge power source comprises sufficient
power to power said bus while said secondary power source initiates.
- [c26] 26.The method of Claim 25, further comprising recharging said bridging power
source with power from said bus and operating said secondary power source at
least until said bridge power source is recharged.
- [c27] 27. A storage medium encoded with a machine readable computer program
code, said code including instructions for causing a computer to implement a
method for operating a power system, the method comprising:
monitoring a primary power source;
if said primary power source exhibits selected characteristics:
directing power from a bridging power source to a bus; and
if said bridging power source is depleted exceeding a first selected threshold,
powering said bus with a secondary power source until at least one of said
primary power source does not exhibit said selected characteristics and said
secondary power source is depleted;
wherein said secondary power source comprises a fuel cell.
- [c28] 28.A computer data signal, said computer data signal, comprising:
instructions for causing a computer to implement a method for operating a
power system, the method comprising:
monitoring a primary power source;
if said primary power source exhibits selected characteristics:

directing power from a bridging power source to a bus; and
if said bridging power source is depleted exceeding a first selected threshold,
powering said bus with a secondary power source until at least one of said
primary power source does not exhibit said selected characteristics and said
secondary power source is depleted;
wherein said secondary power source comprises a fuel cell.